

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-2. (Canceled)

3. (Currently Amended) A disk recording apparatus for a rewritable optical disk, the disk recording apparatus comprising:

a first timing detector having a first timing synchronized with a wobble reproduction signal of the rewritable optical disk;

a second timing detector having a second timing synchronized with a track reproduction signal of the rewritable optical disk;

a phase difference detector configured to detect a phase difference between the first timing and the second timing; and

a controller configured to determine a recording area based on the detected phase difference.

A disk recording apparatus according to claim 1,

wherein the phase difference between the first timing and the second timing is yT , y is a positive number, and T is a channel bit which is a basic unit for a recording mark length on an optical disk;

wherein, if $|y| > |w|$ is established as a relationship between the detected phase difference yT and a preset permissible cycle error value wT of a sync signal detected in the track reproduction signal and w is a positive number, the controller is configured to control writing of data on a recording area using a preset reserved area or an empty area on the optical disk; and

wherein, if $|y| \leq |w|$ is established, the controller is configured to control writing of data to a target track on the optical disk.

4. (Currently Amended) A disk recording apparatus for a rewritable optical disk, the disk recording apparatus comprising:
a first timing detector having a first timing synchronized with a wobble reproduction signal of the rewritable optical disk;
a second timing detector having a second timing synchronized with a track reproduction signal of the rewritable optical disk;
a phase difference detector configured to detect a phase difference between the first timing and the second timing; and
a controller configured to determine a recording area based on the detected phase difference.

A disk recording apparatus according to claim 1,

wherein the phase difference between the first timing and the second timing is yT , y is a positive number, and T is a channel bit which is a basic unit for a recording mark length on an optical disk;

wherein the controller is configured to employ the detected phase difference to calculate an amount n of error data relative to the track reproduction signal, n being a natural number;

wherein, if $n > m$ is established as a relationship between the amount n of error data and a preset permissible amount m of error data, m being a natural number, the controller is configured to control writing of data on a recording area using a preset reserved area or an empty area on the optical disk; and

wherein, if $n \leq m$ is established, the controller is configured to control writing of data to a target track on the optical disk.

5. (Canceled)

6. (Currently Amended) A disk recording apparatus for a rewritable optical disk, the disk recording apparatus comprising:

a first timing detector having a first timing synchronized with a wobble reproduction signal of the rewritable optical disk;
a second timing detector having a second timing synchronized with a track reproduction signal of the rewritable optical disk;
a phase difference detector configured to detect a phase difference between the first timing and the second timing; and
a controller configured to determine a recording area based on the detected phase difference.

A disk recording apparatus according to claim 1,

wherein if the controller determines that the recording area for writing the data is a target track on the optical disk, the controller is configured to control a selector to select a recording timing based on the detected phase difference, and to record data on a recording track in accordance with the selected timing;

wherein the phase difference between the first timing and the second timing is yT , y is a positive number, and T is a channel bit which is a basic unit for a recording mark length on an optical disk;

wherein, if $|y| > |w|$ is established as a relationship between the detected phase difference yT and a preset permissible cycle error value wT of a sync signal detected in the track reproduction signal and w is a positive number, the controller is configured to select the second timing; and

wherein, if $|y| \leq |w|$ is established, the controller is configured to select the first timing.

7. (Currently Amended) A disk recording apparatus for a rewritable optical disk, the disk recording apparatus comprising:

a first timing detector having a first timing synchronized with a wobble reproduction signal of the rewritable optical disk;

a second timing detector having a second timing synchronized with a track reproduction signal of the rewritable optical disk;
a phase difference detector configured to detect a phase difference between the first timing and the second timing; and
a controller configured to determine a recording area based on the detected phase difference,

~~A disk recording apparatus according to claim 1,~~

wherein if the controller determines that the recording area for writing the data is a target track on the optical disk, the controller is configured to control a selector to select a recording timing based on the detected phase difference, and to record data on a recording track in accordance with the selected timing;

wherein the phase difference between the first timing and the second timing is yT , y is a positive number, and T is a channel bit which is a basic unit for a recording mark length on an optical disk;

wherein the controller is configured to employ the detected phase difference to calculate an amount n of error data relative to the track reproduction signal, n being a natural number;

wherein, if $n > m$ is established as a relationship between the amount n of error data and a preset permissible amount m of error data, m being a natural number, the controller is configured to select the second timing; and

wherein, if $n \leq m$ is established, the controller is configured to select the first timing.

8. (Canceled)

9. (Currently Amended) A disk recording apparatus for a rewritable optical disk, the disk recording apparatus comprising:

a first timing detector having a first timing synchronized with a wobble reproduction signal of the rewritable optical disk;

a second timing detector having a second timing synchronized with a track reproduction signal of the rewritable optical disk;

a phase difference detector configured to detect a phase difference between the first timing and the second timing;

a selector configured to select a timing between the first timing and the second timing; and

a controller configured to control the selector to select the timing based on the detected phase difference, and to record data on a recording track in accordance with the selected timing.

A disk recording apparatus according to claim 8,

wherein the phase difference between the first timing and the second timing is yT , y is a positive number, and T is a channel bit which is a basic unit for a recording mark length on an optical disk;

wherein, if $|y| > |w|$ is established as a relationship between the detected phase difference yT and a preset permissible cycle error value wT of a sync signal detected in the track reproduction signal and w is a positive number, the controller is configured to select the second timing; and

wherein, if $|y| \leq |w|$ is established, the controller is configured to select the first timing.

10. (Currently Amended) A disk recording apparatus for a rewritable optical disk, the disk recording apparatus comprising:

a first timing detector having a first timing synchronized with a wobble reproduction signal of the rewritable optical disk;

a second timing detector having a second timing synchronized with a track reproduction signal of the rewritable optical disk;

a phase difference detector configured to detect a phase difference between the first timing and the second timing;

a selector configured to select a timing between the first timing and the second timing; and

a controller configured to control the selector to select the timing based on the detected phase difference, and to record data on a recording track in accordance with the selected timing.

A disk recording apparatus according to claim 8;

wherein the phase difference between the first timing and the second timing is yT , y is a positive number, and T is a channel bit which is a basic unit for a recording mark length on an optical disk;

wherein the controller is configured to employ the detected phase difference to calculate an amount n of error data relative to the track reproduction signal, n being a natural number;

wherein, if $n > m$ is established as a relationship between the amount n of error data and a preset permissible amount m of error data, m being a natural number, the controller is configured to select the second timing; and

wherein, if $n \leq m$ is established, the controller is configured to select the first timing.

Claims 11-12. (Canceled)

13. (Currently Amended) A disk recording method for a rewritable optical disk, the method comprising:

detecting a phase difference between a first timing synchronized with a wobble reproduction signal of the rewritable optical disk and a second timing synchronized with a track reproduction signal of the rewritable optical disk; and

determining a recording area for target data to be written based on the detected phase difference.

A disk recording method according to claim 11;

wherein the phase difference between the first timing and the second timing is yT , y is a positive number, and T is a channel bit which is a basic unit for a recording mark length on an optical disk;

wherein, if $|y| > |w|$ is established as a relationship between the detected phase difference yT and a preset permissible cycle error value wT of a sync signal detected in the track reproduction signal and w is a positive number, the target data is written on a recording area using a preset reserved area or an empty area on the optical disk; and

wherein, if $|y| \leq |w|$ is established, the target data is written to a target track on the optical disk.

14. (Currently Amended) A disk recording method for a rewritable optical disk, the method comprising:
detecting a phase difference between a first timing synchronized with a wobble reproduction signal of the rewritable optical disk and a second timing synchronized with a track reproduction signal of the rewritable optical disk; and
determining a recording area for target data to be written based on the detected phase difference.

~~A disk recording method according to claim 11,~~

wherein the phase difference between the first timing and the second timing is yT , y is a positive number, and T is a channel bit which is a basic unit for a recording mark length on an optical disk;

further comprising employing the detected phase difference to calculate an amount n of error data relative to the track reproduction signal, n being a natural number;

wherein, if $n > m$ is established as a relationship between the amount n of error data and a preset permissible amount m of error data, m being a natural number, the target data is written on a recording area using a preset reserved area or an empty area on the optical disk; and

wherein, if $n \leq m$ is established, the target data is written on a target track on the optical disk.

15. (Canceled)

16. (Currently Amended) A disk recording method for a rewritable optical disk, the method comprising:
detecting a phase difference between a first timing synchronized with a wobble reproduction signal of the rewritable optical disk and a second timing synchronized with a track reproduction signal of the rewritable optical disk;

determining a recording area for target data to be written based on the detected phase difference; and

A disk recording method according to claim 11, further comprising, if the recording area for the target data to be written is determined to be a target track on the optical disk, selecting a recording timing between the first timing and the second timing based on the detected phase difference;

wherein the phase difference between the first timing and the second timing is yT , y is a positive number, and T is a channel bit which is a basic unit for a recording mark length on an optical disk;

wherein, if $|y| > |w|$ is established as a relationship between the detected phase difference yT and a preset permissible cycle error value wT of a sync signal detected in the track reproduction signal and w is a positive number, the second timing is selected as the recording timing; and

wherein, if $|y| \leq |w|$ is established, the first timing is selected as the recording timing.

17. (Currently Amended) A disk recording method for a rewritable optical disk, the method comprising:

detecting a phase difference between a first timing synchronized with a wobble reproduction signal of the rewritable optical disk and a second timing synchronized with a track reproduction signal of the rewritable optical disk;

determining a recording area for target data to be written based on the detected phase difference; and

~~A disk recording method according to claim 11, further comprising, if the recording area for the target data to be written is determined to be a target track on the optical disk, selecting a recording timing between the first timing and the second timing based on the detected phase difference;~~

~~wherein the phase difference between the first timing and the second timing is yT , y is a positive number, and T is a channel bit which is a basic unit for a recording mark length on an optical disk;~~

~~further comprising employing the detected phase difference to calculate an amount n of error data relative to the track reproduction signal, n being a natural number;~~

~~wherein, if $n > m$ is established as a relationship between the amount n of error data and a preset permissible amount m of error data, m being a natural number, the second timing is selected as the recording timing; and~~

~~wherein, if $n \leq m$ is established, the first timing is selected as the recording timing.~~

18. (Canceled)

19. (Currently Amended) A disk recording method for a rewritable optical disk, the method comprising:

detecting a phase difference between a first timing synchronized with a wobble reproduction signal of the rewritable optical disk and a second timing synchronized with a track reproduction signal of the rewritable optical disk;

selecting a recording timing between the first timing and the second timing based on the detected phase difference; and

recording data to the rewritable optical disk in accordance with the selected recording timing.

~~A disk recording method according to claim 18,~~

wherein the phase difference between the first timing and the second timing is yT , y is a positive number, and T is a channel bit which is a basic unit for a recording mark length on an optical disk;

wherein, if $|y| > |w|$ is established as a relationship between the detected phase difference yT and a preset permissible cycle error value wT of a sync signal detected in the track reproduction signal and w is a positive number, the second timing is selected as the recording timing; and

wherein, if $|y| \leq |w|$ is established, the first timing is selected as the recording timing.

20. (Currently Amended) A disk recording method for a rewritable optical disk, the method comprising:

detecting a phase difference between a first timing synchronized with a wobble reproduction signal of the rewritable optical disk and a second timing synchronized with a track reproduction signal of the rewritable optical disk;

selecting a recording timing between the first timing and the second timing based on the detected phase difference; and

recording data to the rewritable optical disk in accordance with the selected recording timing.

~~A disk recording method according to claim 18;~~

wherein the phase difference between the first timing and the second timing is yT , y is a positive number, and T is a channel bit which is a basic unit for a recording mark length on an optical disk;

further comprising employing the detected phase difference to calculate an amount n of error data relative to the track reproduction signal, n being a natural number;

wherein, if $n > m$ is established as a relationship between the amount n of error data and a preset permissible amount m of error data, m being a natural number, the second timing is selected as the recording timing; and

wherein, if $n \leq m$ is established, the first timing is selected as the recording timing.